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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/758,269

DATE: 07/07/2001
TIME: 13:01:18

Input Set : A:\3914-3.app
Output Set: N:\CRF3\07062001\I758269.raw

3 <110> APPLICANT: IUCHI, SATOSHI
 4 KOBAYASHI, MASATOMO
 5 SHINOZAKI, KAZUO
 7 <120> TITLE OF INVENTION: TRANSGENIC PLANTS CARRYING NEOXANTHIN
 8 CLEAVAGE ENZYME GENE
 10 <130> FILE REFERENCE: 3914-3
 12 <140> CURRENT APPLICATION NUMBER: 09/758,269
 13 <141> CURRENT FILING DATE: 2001-01-12
 15 <150> PRIOR APPLICATION NUMBER: JP 2001-003476
 16 <151> PRIOR FILING DATE: 2001-01-11
 18 <150> PRIOR APPLICATION NUMBER: JP 2000-010056
 19 <151> PRIOR FILING DATE: 2000-01-13
 21 <160> NUMBER OF SEQ ID NOS: 33
 23 <170> SOFTWARE: PatentIn Ver. 2.1
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 1752
 27 <212> TYPE: DNA
 28 <213> ORGANISM: Arabidopsis thaliana
 30 <220> FEATURE:
 31 <221> NAME/KEY: CDS
 32 <222> LOCATION: (1)..(1749)
 34 <400> SEQUENCE: 1
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 36 Met Val Ser Leu Leu Thr Met Pro Met Ser Gly Gly Ile Lys Thr Trp
 37 1 5 10 15
 39 cct caa gcc caa att gat ttg ggt ttt agg ccc att aaa aga caa ccg 96
 40 Pro Gln Ala Gln Ile Asp Leu Gly Phe Arg Pro Ile Lys Arg Gln Pro
 41 20 25 30
 43 aag gtt att aaa tgc acg gtg cag atc gac gta acg gaa tta acc aaa 144
 44 Lys Val Ile Lys Cys Thr Val Gln Ile Asp Val Thr Glu Leu Thr Lys
 45 35 40 45
 47 aaa cgc caa tta ttt aca ccc aga acc acc gct act ccg ccg cag cat 192
 48 Lys Arg Gln Leu Phe Thr Pro Arg Thr Thr Ala Thr Pro Pro Gln His
 49 50 55 60
 51 aat cct ctc cgg cta aac atc ttc cag aaa gcg gcg gcg att gcg atc 240
 52 Asn Pro Leu Arg Leu Asn Ile Phe Gln Lys Ala Ala Ala Ile Ile
 53 65 70 75 80
 55 gac gcg gct gag cgt gca tta atc tca cac gag caa gat tct cca ctt 288
 56 Asp Ala Ala Glu Arg Ala Leu Ile Ser His Glu Gln Asp Ser Pro Leu
 57 85 90 95
 59 ccc aaa acc gct gat cca cgt gtt cag att gcc ggg aat tat tcc ccg 336
 60 Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Tyr Ser Pro
 61 100 105 110
 63 gta ccg gaa tct tcc gtc cgg cga aac ctc acc gtc gaa gga aca atc 384
 64 Val Pro Glu Ser Ser Val Arg Arg Asn Leu Thr Val Glu Gly Thr Ile
 65 115 120 125
 67 cct gac tgc att gac ggt tat atc cgt aac ggc gcg aat ccg atg 432

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68 Pro Asp Cys Ile Asp Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met			
69 130	135	140	
71 ttt gag cca aca gct ggg cac cat tta ttc gac gga gac gga atg gtt	480		
72 Phe Glu Pro Thr Ala Gly His His Leu Phe Asp Gly Asp Gly Met Val			
73 145	150	155	160
75 cac gca gtt aaa ata acc aac ggt tca gct agc tac gca tgc cgg ttt	528		
76 His Ala Val Lys Ile Thr Asn Gly Ser Ala Ser Tyr Ala Cys Arg Phe			
77 165	170	175	
79 aca aaa acc gag aga ttg gtt cag gaa aaa cga ttg ggt cga cca gtt	576		
80 Thr Lys Thr Glu Arg Leu Val Gln Glu Lys Arg Leu Gly Arg Pro Val			
81 180	185	190	
83 ttc ccg aaa gca atc ggc gag ctt cac ggt cac tcg gga atc gca cgt	624		
84 Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala Arg			
85 195	200	205	
87 ttg atg ctg ttt tac gca cgt ggg ctt tgt ggt ctg atc aac aac caa	672		
88 Leu Met Leu Phe Tyr Ala Arg Gly Leu Cys Gly Leu Ile Asn Asn Gln			
89 210	215	220	
91 aac ggc gtc gga gta gca aac gcc ggt ttg gtt tac ttt aat aac cgg	720		
92 Asn Gly Val Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn Arg			
93 225	230	235	240
95 ctt tta gct atg tca gaa gac gat tta ccg tac caa tta aaa att act	768		
96 Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Leu Lys Ile Thr			
97 245	250	255	
99 caa acc ggc gat ctc caa acc gtt gga cgt tac gat ttc gac ggt cag	816		
100 Gln Thr Gly Asp Leu Gln Thr Val Gly Arg Tyr Asp Phe Asp Gly Gln			
101 260	265	270	
103 tta aaa tcc gca atg ata gct cac ccg aaa ctg gac ccg gtt acg aag	864		
104 Leu Lys Ser Ala Met Ile Ala His Pro Lys Leu Asp Pro Val Thr Lys			
105 275	280	285	
107 gag ctt cac gcg tta agc tac gac gtc gtt aag aaa cct tac ctg aaa	912		
108 Glu Leu His Ala Leu Ser Tyr Asp Val Val Lys Lys Pro Tyr Leu Lys			
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111 tac ttc aga ttc tcg cca gac ggc gtt aaa tcg ccg gaa ttg gag atc	960		
112 Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Glu Leu Glu Ile			
113 305	310	315	320
115 ccg ctc gaa act ccg acg atg att cac gat ttc gct ata acg gag aat	1008		
116 Pro Leu Glu Thr Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn			
117 325	330	335	
119 ttt gtg gtg att cct gat caa caa gtc gtg ttc aag ctc ggc gag atg	1056		
120 Phe Val Val Ile Pro Asp Gln Gln Val Val Phe Lys Leu Gly Glu Met			
121 340	345	350	
123 att tcc ggt aaa tct ccg gtt ttc gac gga gaa aag gtt tcc cga	1104		
124 Ile Ser Gly Lys Ser Pro Val Val Phe Asp Gly Glu Lys Val Ser Arg			
125 355	360	365	
127 ttg ggg ata atg ccc aag gac gcg aca gaa gct tct cag ata atc tgg	1152		
128 Leu Gly Ile Met Pro Lys Asp Ala Thr Glu Ala Ser Gln Ile Ile Trp			
129 370	375	380	
131 gtg aac tct ccg gag acg ttc tgt ttt cat ctc tgg aat gca tgg gaa	1200		
132 Val Asn Ser Pro Glu Thr Phe Cys Phe His Leu Trp Asn Ala Trp Glu			

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133	385	390	395	400	
135	tcg ccg gag acg gag gag att gtg gtg atc gga tcg tgt atg tcg ccg				1248
136	Ser Pro Glu Thr Glu Glu Ile Val Val Ile Gly Ser Cys Met Ser Pro				
137	405	410	415		
139	gcg gat tca atc ttc aac gag aga gac gag agc ttg aga agc gtt ttg				1296
140	Ala Asp Ser Ile Phe Asn Glu Arg Asp Glu Ser Leu Arg Ser Val Leu				
141	420	425	430		
143	tcg gag atc agg ata aac ctc aga aca cgt aaa acc acg cgt cgt tcg				1344
144	Ser Glu Ile Arg Ile Asn Leu Arg Thr Arg Lys Thr Arg Arg Ser				
145	435	440	445		
147	ttg ttg gtt aac gag gat gta aat tta gag att ggt atg gtt aac cgg				1392
148	Leu Leu Val Asn Glu Asp Val Asn Leu Glu Ile Gly Met Val Asn Arg				
149	450	455	460		
151	aac cgg tta gga aga aaa acc cgg ttc gcg ttt ttg gct att gct tat				1440
152	Asn Arg Leu Gly Arg Lys Thr Arg Phe Ala Phe Leu Ala Ile Ala Tyr				
153	465	470	475	480	
155	cct tgg cca aaa gtt tcc ggt ttc gct aag gtc gat ctt tgc acc ggt				1488
156	Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu Cys Thr Gly				
157	485	490	495		
159	gag atg aaa aaa tat att tac ggc ggt gag aaa tat ggc ggc gaa cgg				1536
160	Glu Met Lys Lys Tyr Ile Tyr Gly Glu Lys Tyr Gly Gly Glu Pro				
161	500	505	510		
163	ttt ttc ttg ccc ggc aac tcc ggt aac ggc gaa gaa aat gaa gat gac				1584
164	Phe Phe Leu Pro Gly Asn Ser Gly Asn Gly Glu Glu Asn Glu Asp Asp				
165	515	520	525		
167	ggt tat ata ttt tgt cac gtt cat gac gaa gaa aca aag aca tca gag				1632
168	Gly Tyr Ile Phe Cys His Val His Asp Glu Glu Thr Lys Thr Ser Glu				
169	530	535	540		
171	ctt cag att att aac gct gtt aat tta aag ctt gaa gct acg att aaa				1680
172	Leu Gln Ile Ile Asn Ala Val Asn Leu Lys Leu Glu Ala Thr Ile Lys				
173	545	550	555	560	
175	cta ccg tct aga gta ccg tat ggg ttt cat ggc aca ttt gtg gat tcg				1728
176	Leu Pro Ser Arg Val Pro Tyr Gly Phe His Gly Thr Phe Val Asp Ser				
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179	aat gaa ctc gtt gat caa tta taa				1752
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185	<211> LENGTH: 583				
186	<212> TYPE: PRT				
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193	Pro Gln Ala Gln Ile Asp Leu Gly Phe Arg Pro Ile Lys Arg Gln Pro				
194	20	25	30		
196	Lys Val Ile Lys Cys Thr Val Gln Ile Asp Val Thr Glu Leu Thr Lys				
197	35	40	45		
199	Lys Arg Gln Leu Phe Thr Pro Arg Thr Thr Ala Thr Pro Pro Gln His				

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200	50	55	60
202	Asn Pro Leu Arg Leu Asn Ile Phe Gln Lys Ala Ala Ala Ile Ala Ile		
203	65	70	75
205	Asp Ala Ala Glu Arg Ala Leu Ile Ser His Glu Gln Asp Ser Pro Leu		80
206		85	90
208	Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Tyr Ser Pro		95
209		100	105
211	Val Pro Glu Ser Ser Val Arg Arg Asn Leu Thr Val Glu Gly Thr Ile		
212		115	120
214	Pro Asp Cys Ile Asp Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met		125
215		130	135
217	Phe Glu Pro Thr Ala Gly His His Leu Phe Asp Gly Asp Gly Met Val		
218		145	150
220	His Ala Val Lys Ile Thr Asn Gly Ser Ala Ser Tyr Ala Cys Arg Phe		160
221		165	170
223	Thr Lys Thr Glu Arg Leu Val Gln Glu Lys Arg Leu Gly Arg Pro Val		175
224		180	185
226	Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala Arg		190
227		195	200
229	Leu Met Leu Phe Tyr Ala Arg Gly Leu Cys Gly Leu Ile Asn Asn Gln		205
230		210	215
232	Asn Gly Val Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn Arg		220
233		225	230
235	Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Leu Lys Ile Thr		235
236		245	250
238	Gln Thr Gly Asp Leu Gln Thr Val Gly Arg Tyr Asp Phe Asp Gly Gln		240
239		260	265
241	Leu Lys Ser Ala Met Ile Ala His Pro Lys Leu Asp Pro Val Thr Lys		255
242		275	280
244	Glu Leu His Ala Leu Ser Tyr Asp Val Val Lys Lys Pro Tyr Leu Lys		285
245		290	295
247	Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Glu Leu Glu Ile		300
248		305	310
250	Pro Leu Glu Thr Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn		315
251		325	330
253	Phe Val Val Ile Pro Asp Gln Gln Val Val Phe Lys Leu Gly Glu Met		335
254		340	345
256	Ile Ser Gly Lys Ser Pro Val Val Phe Asp Gly Glu Lys Val Ser Arg		350
257		355	360
259	Leu Gly Ile Met Pro Lys Asp Ala Thr Glu Ala Ser Gln Ile Ile Trp		365
260		370	375
262	Val Asn Ser Pro Glu Thr Phe Cys Phe His Leu Trp Asn Ala Trp Glu		380
263		385	390
265	Ser Pro Glu Thr Glu Glu Ile Val Val Ile Gly Ser Cys Met Ser Pro		395
266		405	410
268	Ala Asp Ser Ile Phe Asn Glu Arg Asp Glu Ser Leu Arg Ser Val Leu		400
269		420	425
271	Ser Glu Ile Arg Ile Asn Leu Arg Thr Arg Lys Thr Thr Arg Arg Ser		430
272		435	440
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274	Leu	Leu	Val	Asn	Glu	Asp	Val	Asn	Leu	Glu	Ile	Gly	Met	Val	Asn	Arg
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277	Asn	Arg	Leu	Gly	Arg	Lys	Thr	Arg	Phe	Ala	Phe	Leu	Ala	Ile	Ala	Tyr
278	465				470				475							480
280	Pro	Trp	Pro	Lys	Val	Ser	Gly	Phe	Ala	Lys	Val	Asp	Leu	Cys	Thr	Gly
281					485				490							495
283	Glu	Met	Lys	Lys	Tyr	Ile	Tyr	Gly	Gly	Glu	Lys	Tyr	Gly	Gly	Glu	Pro
284		500				505				505						510
286	Phe	Phe	Leu	Pro	Gly	Asn	Ser	Gly	Asn	Gly	Glu	Glu	Asn	Glu	Asp	Asp
287		515				520				520						525
289	Gly	Tyr	Ile	Phe	Cys	His	Val	His	Asp	Glu	Glu	Thr	Lys	Thr	Ser	Glu
290		530				535				535						540
292	Leu	Gln	Ile	Ile	Asn	Ala	Val	Asn	Leu	Lys	Leu	Glu	Ala	Thr	Ile	Lys
293	545					550				555						560
295	Leu	Pro	Ser	Arg	Val	Pro	Tyr	Gly	Phe	His	Gly	Thr	Phe	Val	Asp	Ser
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314	1				5					10						15
316	cat	cac	tct	ctt	ctt	cgc	cgc	cga	tct	tcc	tct	cct	act	ctc	ctc	cgt
317	His	His	Ser	Leu	Leu	Arg	Arg	Arg	Ser	Ser	Ser	Pro	Thr	Leu	Leu	Arg
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320	atc	aac	tcc	gcc	gtc	gtc	gaa	gaa	cgt	tct	cca	atc	aca	aac	cca	agc
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322					35				40							45
324	gac	aac	aat	gat	cgt	cgt	aaa	ccc	aaa	aca	ctc	cac	aac	cgt	acc	
325	Asp	Asn	Asn	Asp	Arg	Arg	Asn	Lys	Pro	Lys	Thr	Leu	His	Asn	Arg	Thr
326					50				55							60
328	aat	cac	acc	tta	gtc	tca	tca	cca	ccg	aaa	ctc	cga	cca	gaa	atg	act
329	Asn	His	Thr	Leu	Val	Ser	Ser	Pro	Pro	Lys	Leu	Arg	Pro	Glu	Met	Thr
330	65				70					75						80
332	ctc	gca	aca	gct	ctc	tcc	acc	acc	gtc	gaa	gat	gta	atc	aac	acg	tcc
333	Leu	Ala	Thr	Ala	Leu	Phe	Thr	Thr	Val	Glu	Asp	Val	Ile	Asn	Thr	Phe
334					85				90							95
336	atc	gat	cca	cct	tca	cgt	cct	tcc	gtt	gat	cca	aaa	cat	gtc	ctc	tct
337	Ile	Asp	Pro	Pro	Ser	Arg	Pro	Ser	Val	Asp	Pro	Lys	His	Val	Leu	Ser
338					100				105							110
340	gat	aac	ttc	gct	cct	gtc	ctc	gac	gag	ctt	cct	cca	aca	gac	tgt	gaa
341	Asp	Asn	Phe	Ala	Pro	Val	Leu	Asp	Glu	Leu	Pro	Pro	Thr	Asp	Cys	Glu

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